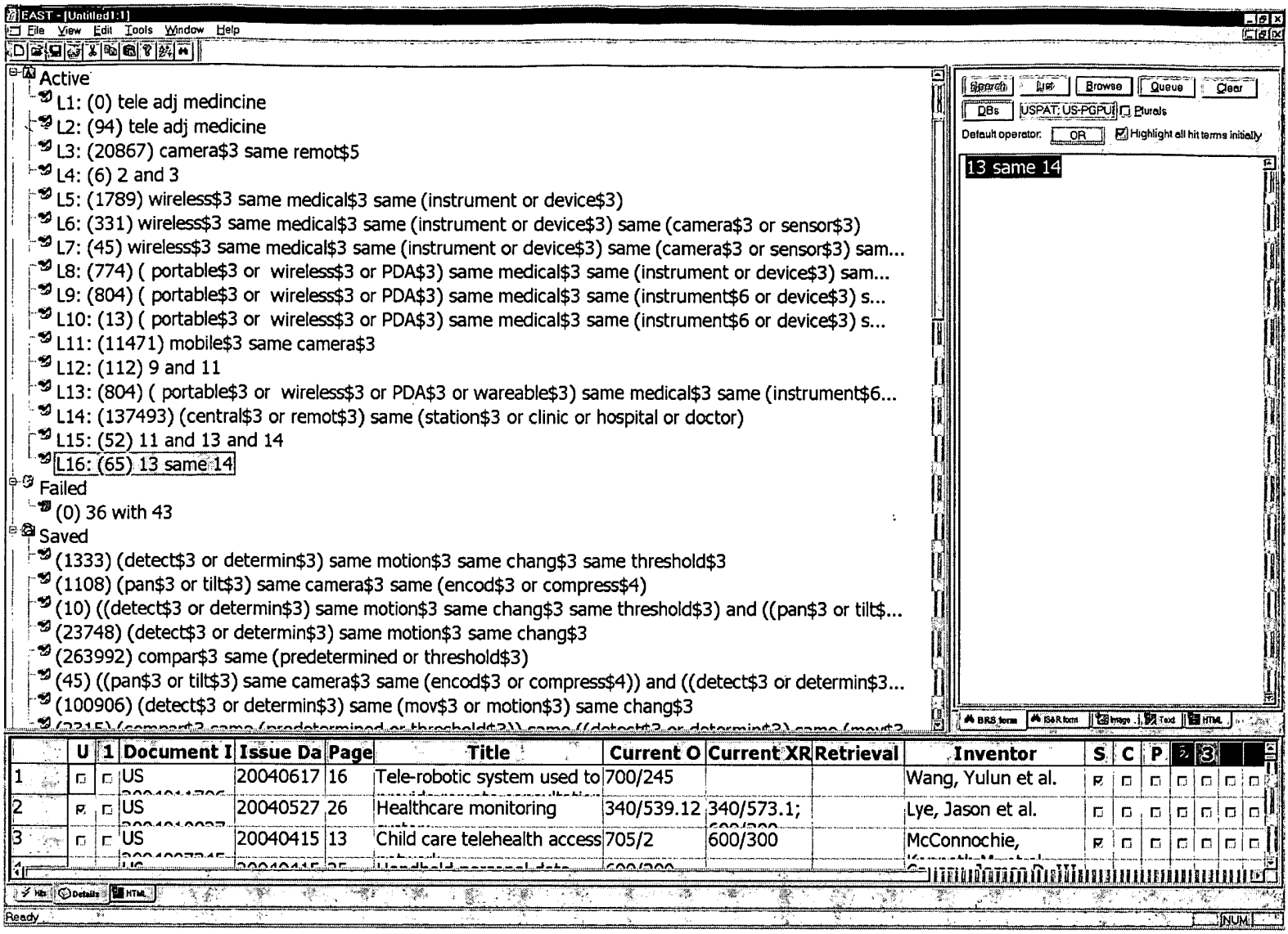
EAST - [Untitled1:1]
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Active
L1: (0) tele adj medincine
L2: (94) tele adj medicine
L3: (20867) camera$3 same remot$5
L4: (6) 2 and 3
L5: (1789) wireless$3 same medical$3 same (instrument or device$3)
L6: (331) wireless$3 same medical$3 same (instrument or device$3) same (camera$3 or sensor$3)
L7: (45) wireless$3 same medical$3 same (instrument or device$3) same (camera$3 or sensor$3) sam...
L8: (774) (portable$3 or wireless$3 or PDA$3) same medical$3 same (instrument or device$3) sam...
L9: (804) (portable$3 or wireless$3 or PDA$3) same medical$3 same (instrument$6 or device$3) s...
L10: (13) (portable$3 or wireless$3 or PDA$3) same medical$3 same (instrument$6 or device$3) s...
L11: (11471) mobile$3 same camera$3
L12: (112) 9 and 11
L13: (804) (portable$3 or wireless$3 or PDA$3 or wareable$3) same medical$3 same (instrument$6...
L14: (137493) (central$3 or remot$3) same (station$3 or clinic or hospital or doctor)
L15: (52) 11 and 13 and 14
L16: (65) 13 same 14
Failed
(0) 36 with 43
Saved
(1333) (detect$3 or determin$3) same motion$3 same chang$3 same threshold$3
(1108) (pan$3 or tilt$3) same camera$3 same (encod$3 or compress$4)
(10) ((detect$3 or determin$3) same motion$3 same chang$3 same threshold$3) and ((pan$3 or tilt$...
(23748) (detect$3 or determin$3) same motion$3 same chang$3
(263992) compar$3 same (predetermined or threshold$3)
(45) ((pan$3 or tilt$3) same camera$3 same (encod$3 or compress$4)) and ((detect$3 or determin$3...
(100906) (detect$3 or determin$3) same (mov$3 or motion$3) same chang$3
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Plurals
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OR
Highlight all hit terms initially
13 same 14
BRS form
ISR form
Image
Text
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Document I
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Title
Current O
Current XR
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Inventor
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1
US
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16
Tele-robotic system used to
700/245
Wang, Yulun et al.
2
US
20040527
26
Healthcare monitoring
340/539.12
340/573.1;
Lye, Jason et al.
3
US
20040415
13
Child care telehealth access
705/2
600/300
McConnochie,
Hits
Details
HTML
Ready
NUM

EAST Browser - L12: (112) 9 and 11 | US 6519241 | Tag: S | Doc: 89/100 | "Full" 5/10 (Total images 10)

File Edit View Tools Window Help

US-PAT-NO: 6519241

DOCUMENT-IDENTIFIER: US 6519241 B1

TITLE: Mobile telephone for

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Detailed Description Text - DETX (14):
The mobile telephone 13 is also coupled v
electronic system 23. This medical electron
measuring sensor for determining the glucose
diabetes or some other metabolic illness whi

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Pages
82	US 6760262		USPAT	2004070	65
83	US 6739511		USPAT	2004052	607
84	US 6697103		USPAT	2004022	20
85	US 6690268		USPAT	2004021	201
86	US 6680792		USPAT	2004012	40
87	US 6556465		USPAT	2003042	65
88	US 6549456		USPAT	2003041	66
89	US 6519241		USPAT	2003021	10
90	US 6514296		USPAT	2003020	37
91	US 6383136		USPAT	2002050	7
92	US 6370075		USPAT	2002040	66
93	US 6208542		USPAT	2001032	21
94	US 6206480		USPAT	2001032	18
95	US 6185119		USPAT	2001020	66
96	US 6184726		USPAT	2001020	66
97	US 6080989		USPAT	2000062	12
98	US 5980977		USPAT	1999110	71
99	US 5867363		USPAT	1999020	35

Details Text Image HTML

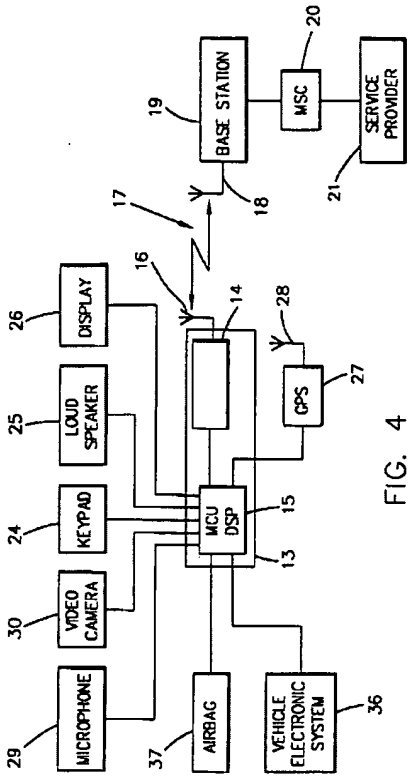

FIG. 4

Details Text Image HTML Full

EAST Browser - L16: (65) 13 same 14 | US 6454708 | Tag: S | Doc: 43/65 | "Full" 1/42 (Total images 42)

File Edit View Tools Window Help

US-PAT-NO: 6454708

DOCUMENT-IDENTIFIER: US 6454708 B1

TITLE: Portable remote patie
memory card or smart c

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Abstract Text - ABTX (1):
A system and method for monitoring health from
a subject. The system is characterized by a

Details | Text | Image | HTML | KWIC

	Document I	Kind Code	Source	Issue D	Pages
29	US 2001004		US-PGP	2001112	12
30	US 2001003		US-PGP	2001102	27
31	US 2001002		US-PGP	2001092	25
32	US 6694180		USPAT	2004021	15
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8

Details | Text | Image | HTML

US006454708B1

(12) **United States Patent**
Ferguson et al.

(10) **Patent No.: US 6,454,708 B1**
(45) **Date of Patent: Sep. 24, 2002**

(54) **PORTABLE REMOTE PATIENT TELEMONITORING SYSTEM USING A MEMORY CARD OR SMART CARD**

(75) Inventors: Pete Ferguson, Cambridge (GB); Harpal Kumar, Cambridge (GB); Graham Lay, Wilburton (GB); Mike Llewellyn, Ely (GB); John D. Place, Bury St. Edmunds (GB)

(73) Assignee: Nexan Limited, Cambridge (GB)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 118 days.

(21) Appl. No.: 09/591,597

(22) Filed: Jun. 9, 2000

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/252,403, filed on Apr. 15, 1999.

(51) Int. Cl.[7] A61B 5/00

(52) U.S. Cl. 600/300; 128/903; 128/904

(58) Field of Search 600/300, 301, 600/390, 393, 508, 509; 128/903, 904; 705/1, 2, 3; 607/77

(56) **References Cited**

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(List continued on next page.)

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(List continued on next page.)

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"Microcomputer-based Telemetry System for ECG Monitoring," *Proceedings of the Ninth Annual Conference of the IEEE Engineering in Medicine and Biology Society*, The Boston Plaza Hotel, Boston, MA, Nov. 13–16, 1987, vol. 3 of 4, 2 pages.

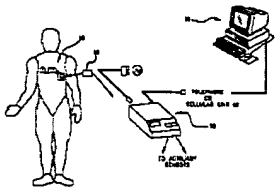
(List continued on next page.)

Primary Examiner—Eric F. Winakur
Assistant Examiner—David McCrosky
(74) *Attorney, Agent, or Firm*—Woodcock Washburn LLP

(57) **ABSTRACT**

A system and method for monitoring health parameters and capturing data from a subject. The system is characterized by a cordless, disposable sensor band with sensors for measuring full waveform ECG, full waveform respiration, skin temperature, and motion, and a connector which accepts a memory card or a smart card for storage of the measured data. After a predetermined period of time, such as when the sensor band is removed, the memory card or smart card is removed and inserted into a monitoring device which reads the stored health parameter data of the subject. The monitoring device includes a base station that includes a memory/smart card reader and is connected to conventional phone lines for transferring the collected data to a remote monitoring station. The base station may also capture additional clinical data, such as blood pressure data, and to perform data checks. Subject safety is enhanced by the ability of the base station to compare clinical data, e.g. ECG, against given profiles and to mark events when appropriate or when the base station is programmed to do so. The remote monitoring station allows the presentation and review of data (including events) forwarded by the sensor band. ECG analysis software and a user-friendly graphical user interface are provided to remotely analyze the transmitted data and to permit system maintenance and upkeep. In alternative embodiments, a smart card includes the sensor band's electronics and/or signal transmission circuitry in conjunction with a portable data logger so that the electronics may be reused from one disposable sensor band to the next without limiting the patient's range of movement. The system of the invention has useful application to the collection of subject clinical data during drug trials and medical testing for regulatory approvals as well as management of subjects with chronic diseases.

78 Claims, 21 Drawing Sheets



Details | Text | Image | HTML | Full

EAST Browser - L16: (65) 13 same 14 | US 6442430 | Tag: S | Doc: 45/65 | "Full" 1/18 (Total images 18)

File Edit View Tools Window Help

US-PAT-NO: 6442430

DOCUMENT-IDENTIFIER: US 6442430 B1

TITLE: Implantable medical d
video and methods of u

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Detailed Description Text - DETX (47):
Embodiments that utilize video camera 626
physician to program the IMD while being mon
stationed at a remote location. For instanc

Details | Text | Image | HTML | KWIC

	Document I	Kind Code	Source	Issue D	Pages
29	US 2001004		US-PGP	2001112	12
30	US 2001003		US-PGP	2001102	27
31	US 2001002		US-PGP	2001092	25
32	US 6694180		USPAT	2004021	15
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8

Details | Text | Image | HTML

US006442430B1

(12) **United States Patent**
Ferek-Petric

(10) **Patent No.: US 6,442,430 B1**
(45) **Date of Patent: Aug. 27, 2002**

(54) **IMPLANTABLE MEDICAL DEVICE PROGRAMMERS HAVING HEADSET VIDEO AND METHODS OF USING SAME**

(75) Inventor: Bozidar Ferek-Petric, Zagreb (HR)

(73) Assignee: Medtronic, Inc., Minneapolis, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/727,463

(22) Filed: Dec. 4, 2000

(51) Int. Cl.[7] A61N 1/37

(52) U.S. Cl. 607/32

(58) Field of Search 607/30, 31, 32, 607/60

(56) **References Cited**

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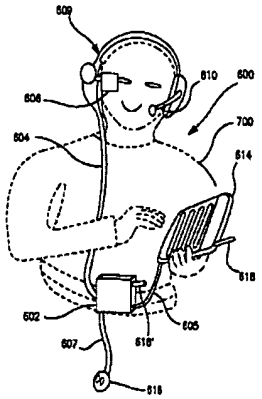
Arzbaecher et al., "Automatic Tachycardia Recognition", *PACE*, 541–547 (May–Jun. 1984).
Olson et al., "IEEE Computer Society Press", *Computers in Cardiology*, 167–170 (Oct. 7–10, 1984.)

Primary Examiner—Scott M. Getzow
(74) *Attorney, Agent, or Firm*—Thomas F. Woods; Eric R. Waldkoetter; Thomas G. Berry

(57) **ABSTRACT**

Programmers, systems and methods utilizing body-wearable components, such as a head-mounted video display apparatus, are provided to program implantable medical devices (IMDs). The head-mounted video display apparatus provides information regarding programming parameters as well as information regarding the patient and/or the IMD. By being worn on the body, programmers of the present invention are highly portable. Further, by providing a head-mounted video display apparatus, programmers of the present invention provide a display that remains viewable even in crowded environments.

35 Claims, 8 Drawing Sheets



Details | Text | Image | HTML | Full

US-PAT-NO: 6292698

DOCUMENT-IDENTIFIER: US 6292698 B1
See image for Certificate of Correction

TITLE: World wide patient lo
for implantable medica

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Detailed Description Text - DETX (34):
As described above, implantable devices s
telemetry transceivers with range suitable f

Details Text Image HTML KWIC

	Document I	Kind Code	Source	Issue D	Pages
30	US 2001003		US-PGP	2001102	27
31	US 2001002		US-PGP	2001092	25
32	US 6694180		USPAT	2004021	15
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17

Details Text Image HTML

US006292698B1

(12) **United States Patent**
Duffin et al.

(10) **Patent No.: US 6,292,698 B1**
(45) **Date of Patent: Sep. 18, 2001**

(54) **WORLD WIDE PATIENT LOCATION AND DATA TELEMETRY SYSTEM FOR IMPLANTABLE MEDICAL DEVICES**

(75) Inventors: Edwin G. Duffin, New Brighton; David L. Thompson, Fridley; Steven D. Goedeke, Forest Lake; Gregory J. Haubrich, Champlin, all of MN (US)

(73) Assignee: Medtronic, Inc., Minneapolis, MN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/045,275

(22) Filed: Mar. 20, 1998

Related U.S. Application Data

(63) Continuation of application No. 08/494,218, filed on Jun. 23, 1995, now Pat. No. 5,752,976.

(51) Int. Cl.[7] A61N 1/37
(52) U.S. Cl. 607/32
(58) Field of Search 607/32, 60; 128/904, 128/905

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,544,661 * 8/1996 Davis et al. 128/904
5,625,670 * 5/1997 Markowitz et al. 607/32

* cited by examiner

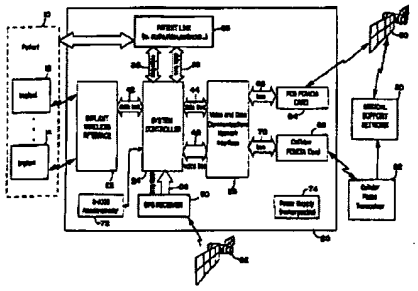
Primary Examiner—Scott M. Getzow

(74) *Attorney, Agent, or Firm*—Michael B. Atlass; Harold R. Patton

(57) **ABSTRACT**

A system for communicating with a medical device implanted in an ambulatory patient and for locating the patient in order to selectively monitor device function, alter device operating parameters and modes and provide emergency assistance to and communications with a patient. The implanted device includes a telemetry transceiver for communicating data and operating instructions between the implanted device and an external patient communications control device that is either worn by or located in proximity to the patient within the implanted device transceiving range. The control device preferably includes a communication link with a remote medical support network, a global positioning satellite receiver for receiving positioning data identifying the global position of the control device, and a patient activated link for permitting patient initiated personal communication with the medical support network. A system controller in the control device controls data and voice communications for selectively transmitting patient initiated personal communications and global positioning data to the medical support network, for initiating telemetry out of data and operating commands from the implanted device and transmission of the same to the medical support network, and for receiving and initiating re-programming of the implanted device operating modes and parameters in response to instructions received from the medical support network. The communications link between the medical support network and the patient communications control device may comprise a world wide satellite network, hard-wired telephone network, a cellular telephone network or other personal communications system.

25 Claims, 6 Drawing Sheets



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EAST Browser - L16: (65) 13 same 14 | US 6213942 | Tag: S | Doc: 50/65 | "Full" 1/25 (Total images 25)

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US-PAT-NO: 6213942

DOCUMENT-IDENTIFIER: US 6213942 B1

TITLE: Telemeter design and telemetry system

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Brief Summary Text - BSTX (6):
Remote telemeters of medical telemetry sy

Details | Text | Image | HTML | KWIC

	Document I	Kind Code	Source	Issue D	Pages
33	US 6693516		USPAT	2004021	25
34	US 6687523		USPAT	2004020	30
35	US 6680792		USPAT	2004012	40
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25

Details | Text | Image | HTML

US006213942B1

(12) **United States Patent**
Flach et al.

(10) **Patent No.: US 6,213,942 B1**
(45) **Date of Patent: Apr. 10, 2001**

(54) **TELEMETER DESIGN AND DATA TRANSFER METHODS FOR MEDICAL TELEMETRY SYSTEM**

(75) Inventors: Terry E. Flach, Altadena; Michael D. Stoop, Aliso Viejo, both of CA (US)

(73) Assignee: Vitalcom, Inc., Tustin, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/315,254

(22) Filed: May 20, 1999

Related U.S. Application Data

(62) Division of application No. 08/475,594, filed on Jun. 3, 1996, now Pat. No. 5,944,659.
(60) Provisional application No. 60/006,600, filed on Nov. 13, 1995.

(51) Int. Cl.[7] A61B 5/00; A61F 2/02
(52) U.S. Cl. 600/300; 600/301; 128/903; 128/904
(58) Field of Search 600/300, 301, 600/481, 343, 347, 500, 529, 544-545, 595; 128/900, 903, 904, 905; 705/2, 3

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,603,881 9/1971 Thomas .
3,826,868 7/1974 Nugent .
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4,051,522 9/1977 Healy et al. .

(List continued on next page.)

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0502459 6/1994 (EP) .
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2258860 2/1993 (GB) .
2271691 4/1994 (GB) .

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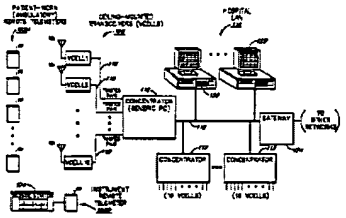
Product brochure titled "Wireless Connectivity by Pacific Communications, Inc.", 1993.
International Search Report, dated Oct.

Primary Examiner—Cary O'Connor
Assistant Examiner—Michael Astorino
(74) *Attorney, Agent, or Firm*—Knobbe, Martens, Olson & Bear, LLP.

(57) **ABSTRACT**

A medical telemetry system is provided for collecting the real-time physiologic data of patients (including ambulatory patients) of a medical facility, and for transferring the data via RF to a real-time data distribution network for monitoring and display. The system includes battery-powered remote telemeters which attach to respective patients, and which collect and transmit (in data packets) the physiologic data of the patients. The remote telemeters communicate bi-directionally with a number of ceiling-mounted RF transceivers, referred to as "VCELLs," using a wireless TDMA protocol. The VCELLs, which are hardwire-connected to a LAN, forward the data packets received from the telemeters to patient monitoring stations on the LAN. The VCELLs are distributed throughout the medical facility such that different VCELLs provide coverage for different patient areas. As part of the wireless TDMA protocol, the remote telemeters continuously assess the quality of the RF links offered by different nearby VCELLs (by scanning the frequencies on which different VCELLs operate), and connect to those VCELLs which offer the best link conditions. To provide a high degree of protection against multi-path interference, each remote telemeter maintains connections with two different VCELLs at-a-time, and transmits all data packets (on different frequencies and during different timeslots) to both VCELLs; the system thereby provides space, time and frequency diversity on wireless data packet transfers from the telemeters. The telemeters and VCELLs also implement a patient location protocol for enabling the monitoring of the locations of individual patients. The architecture can accommodate a large number of patients (e.g., 500 or more) while operating within the transmission power limits of the VHF medical telemetry band.

22 Claims, 11 Drawing Sheets



Details | Text | Image | HTML | Full

EAST Browser - L16: (65) 13 same 14 | US 6083156 | Tag: S | Doc: 53/65 | "Full" 1/11 (Total images 11)

File Edit View Tools Window Help

US-PAT-NO: 6083156

DOCUMENT-IDENTIFIER: US 6083156 A

TITLE: Portable integrated p

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Brief Summary Text - BSTX (15):

Other physiological monitoring systems de
5,375,604 (1994) and 5,417,222 (1995) are ei
systems
for monitoring only (i.e. not intended to pe

Details | Text | Image | HTML | KWIC

	Document I	Kind Code	Source	Issue D	Pages
36	US 6642844		USPAT	2003110	8
37	US 6641533		USPAT	2003110	33
38	US 6626902		USPAT	2003093	15
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25
51	US 6171264		USPAT	2001010	7
52	US 6083248		USPAT	2000070	25
53	US 6083156		USPAT	2000070	11

Details | Text | Image | HTML

US006083156A

United States Patent [19]

Lisiecki

[11] Patent Number: 6,083,156

[45] Date of Patent: Jul. 4, 2000

[54] PORTABLE INTEGRATED PHYSIOLOGICAL MONITORING SYSTEM

[75] Inventor: Ronald S. Lisiecki, 815 S. Yale Ave. #C, Salt Lake City, Utah 84105-1330

[73] Assignee: Ronald S. Lisiecki, Salt Lake City, Utah

[21] Appl. No.: 09/192,714

[22] Filed: Nov. 16, 1998

[51] Int. Cl.[7] A61B 5/0205

[52] U.S. Cl. 600/301

[58] Field of Search 600/300, 301, 600/503, 509, 534, 544

[56] References Cited

U.S. PATENT DOCUMENTS

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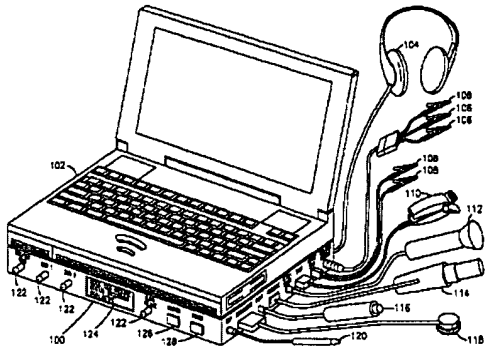
Primary Examiner—Max Hindenburg
Attorney, Agent, or Firm—Garton M. Hobson

[57] ABSTRACT

A portable, integrated physiological monitoring system is described for use in clinical outpatient environments. The system consists of a plethora of sensors and auxiliary devices, an electronics unit (100) that interfaces to the sensors and devices, and a portable personal computer (102). Electrodes (106) are provided to acquisition electrocardiographic, electroencephalographic, and neuromuscular signals. Electrodes (108) are provided to stimulate neural and muscular tissue. A finger pulse oximeter (110), an M-mode ultrasonic transducer (112), an airflow sensor (114), a temperature probe (120), a patient event switch (116), and an electronic stethoscope (118) are provided. A portable personal computer (102) interfaces to the electronics unit (100) via a standard parallel printer port interface (150) to allow communication of commands and information to/from the electronics unit (100). Control and display of the information gathered from the electronics unit (100) is accomplished via an application program executing on the portable personal computer (102). Sharing of common data acquisition hardware along with preliminary processing of information gathered is accomplished within the electronics unit (100). The entire system is battery operated and portable. This system, because of its architecture, offers significant cost advantages as well as unique modes of operation that cannot be achieved from the individual physiological parameter measurement devices alone. The system allows for the integration of acquisitioned information from the sensors into a patient's database stored on the portable personal computer.

20 Claims, 2 Drawing Sheets



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physiologic data to the central station over a
common.

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	Document I	Kind Code	Source	Issue D	Pages
39	US 6589170		USPAT	2003070	27
40	US 6558320		USPAT	2003050	19
41	US 6544174		USPAT	2003040	40
42	US 6491647		USPAT	2002121	41
43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
47	US 6292698		USPAT	2001091	17
48	US 6292687		USPAT	2001091	13
49	US 6221012		USPAT	2001042	20
50	US 6213942		USPAT	2001041	25
51	US 6171264		USPAT	2001010	7
52	US 6083248		USPAT	2000070	25
53	US 6083156		USPAT	2000070	11
54	US 6059576		USPAT	2000050	17
55	US 6014346		USPAT	2000011	16
56	US 5944659		USPAT	1999083	25

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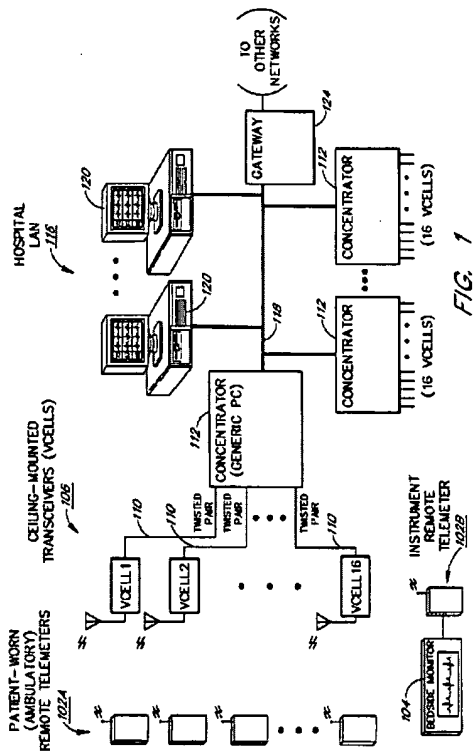

FIG. 1

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US-PAT-NO: 5752976

DOCUMENT-IDENTIFIER: US 5752976 A

TITLE: World wide patient loca
for implantable medical

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Detailed Description Text - DETX (33):
As described above, implantable devices suc
telemetry transceivers with range suitable for
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41	US 6544174		USPAT	2003040	40
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43	US 6454708		USPAT	2002092	42
44	US 6445284		USPAT	2002090	26
45	US 6442430		USPAT	2002082	18
46	US 6415792		USPAT	2002070	8
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49	US 6221012		USPAT	2001042	20
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54	US 6059576		USPAT	2000050	17
55	US 6014346		USPAT	2000011	16
56	US 5944659		USPAT	1999083	25
57	US 5752976		USPAT	1998051	17

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US005752976A

United States Patent [19]

Duffin et al.

[11] Patent Number: 5,752,976

[45] Date of Patent: May 19, 1998

[54] WORLD WIDE PATIENT LOCATION AND DATA TELEMETRY SYSTEM FOR IMPLANTABLE MEDICAL DEVICES

[75] Inventors: Edwin G. Duffin, New Brighton; David L. Thompson, Fridley; Steven D. Goedeke, Forest Lake; Gregory J. Haubrich, Champlin, all of Minn.

[73] Assignee: Medtronic, Inc., Minneapolis, Minn.

[21] Appl. No.: 494,218

[22] Filed: Jun. 23, 1995

[51] Int. Cl.[6] A61N 1/37

[52] U.S. Cl. 607/32

[58] Field of Search 364/413.02; 128/903, 904, 696; 607/32, 60

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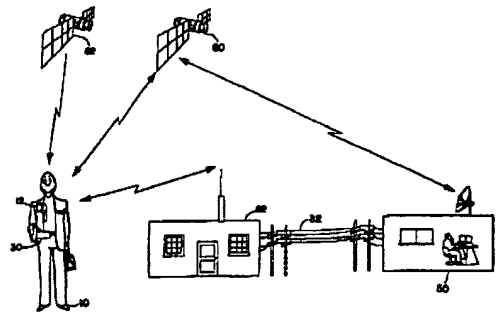
Primary Examiner—Scott M. Getzow
Attorney, Agent, or Firm—Harold R. Patton; Michael B. Atkins

[57] ABSTRACT

A system and method for communicating with a medical device implanted in an ambulatory patient and for locating the patient in order to selectively monitor device function, alter device operating parameters and modes and provide emergency assistance to and communications with a patient. The implanted device includes a telemetry transceiver for communicating data and operating instructions between the implanted device and an external patient communications control device that is either worn by or located in proximity to the patient within the implanted device transceiving range. The control device preferably includes a communication link with a remote medical support network, a global positioning satellite receiver for receiving positioning data identifying the global position of the control device, and a patient activated link for permitting patient initiated personal communication with the medical support network. A system controller in the control device controls data and voice communications for selectively transmitting patient initiated personal communications and global positioning data to the medical support network, for initiating telemetry out of data and operating commands from the implanted device and transmission of the same to the medical support network, and for receiving and initiating re-programming of the implanted device operating modes and parameters in response to instructions received from the medical support network. The communications link between the medical support network and the patient communications control device may comprise a world wide satellite network, hard-wired telephone network, a cellular telephone network or other personal communications system.

34 Claims, 6 Drawing Sheets



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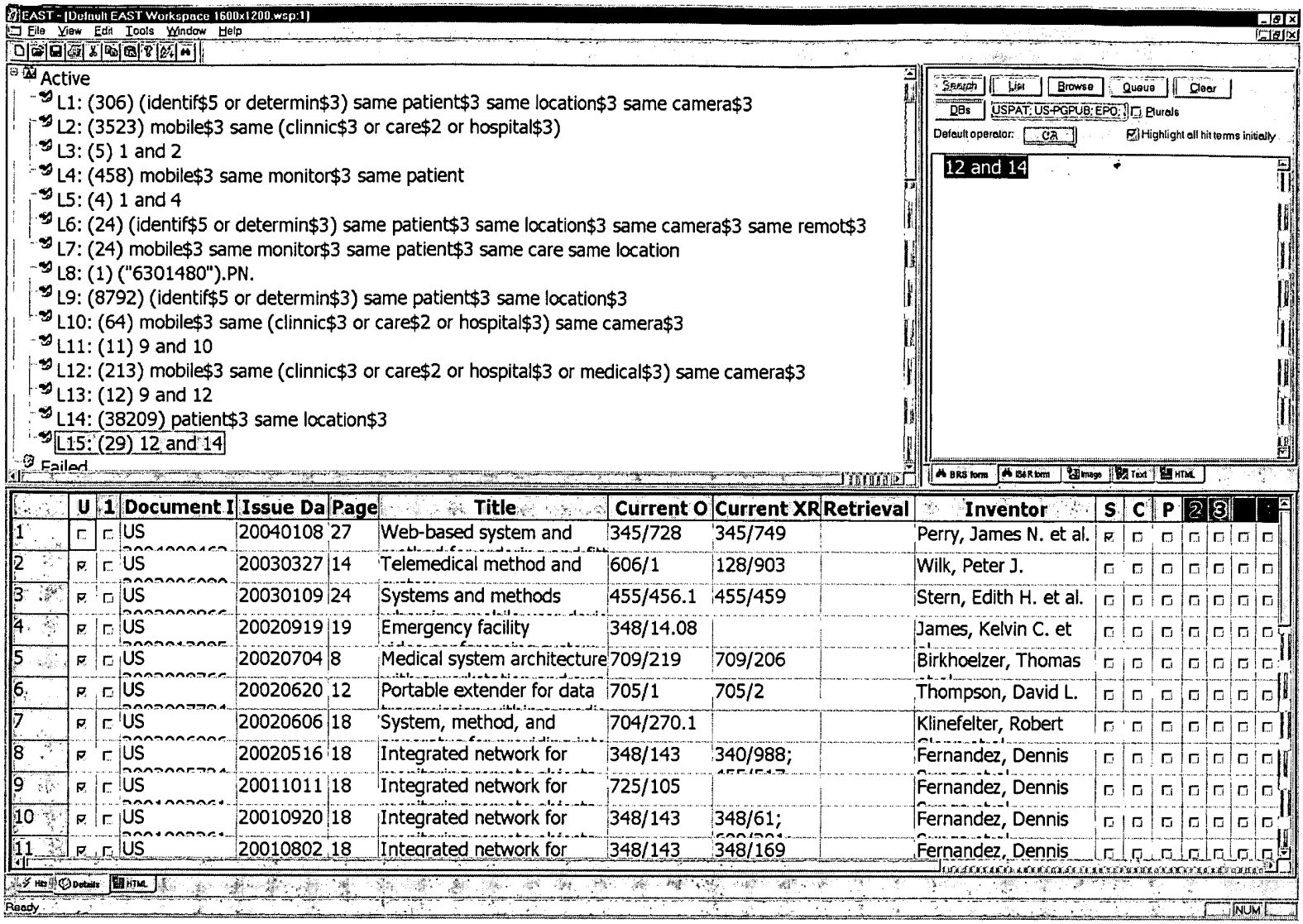

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2	☑	☐	US	20030327	14	Telemedical method and	606/1	128/903		Wilk, Peter J.	☐	☐	☐	☐	☐
3	☑	☐	US	20030109	24	Systems and methods	455/456.1	455/459		Stern, Edith H. et al.	☐	☐	☐	☐	☐
4	☑	☐	US	20020919	19	Emergency facility	348/14.08			James, Kelvin C. et	☐	☐	☐	☐	☐
5	☑	☐	US	20020704	8	Medical system architecture	709/219	709/206		Birkhoelzer, Thomas	☐	☐	☐	☐	☐
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7	☑	☐	US	20020606	18	System, method, and	704/270.1			Klinefelter, Robert	☐	☐	☐	☐	☐
8	☑	☐	US	20020516	18	Integrated network for	348/143	340/988;		Fernandez, Dennis	☐	☐	☐	☐	☐
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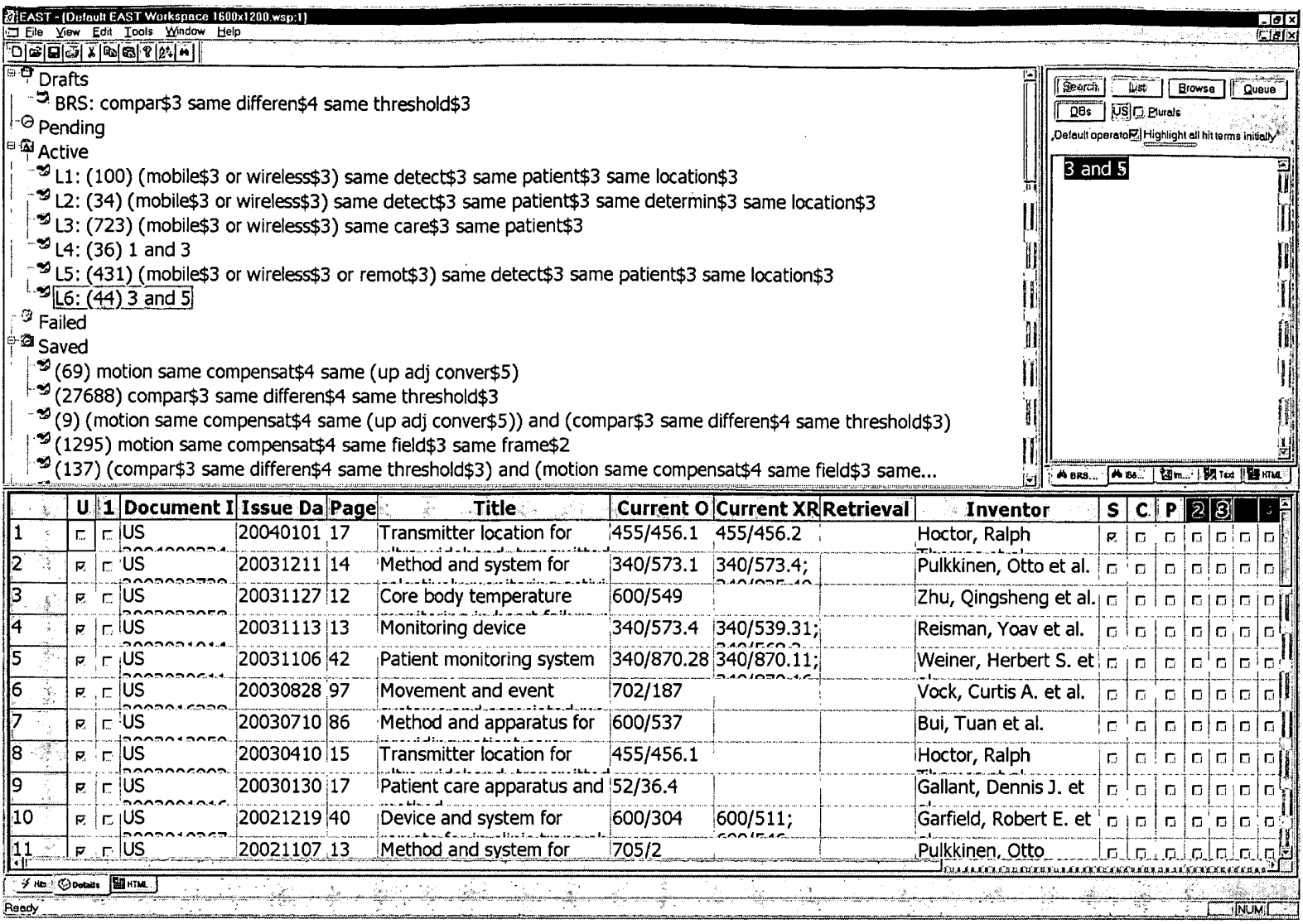

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2	☑	☐	US	20031211	14	Method and system for	340/573.1	340/573.4;		Pulkkinen, Otto et al.	☐	☐	☐	☐	☐	☐	☐
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4	☑	☐	US	20031113	13	Monitoring device	340/573.4	340/539.31;		Reisman, Yoav et al.	☐	☐	☐	☐	☐	☐	☐
5	☑	☐	US	20031106	42	Patient monitoring system	340/870.28	340/870.11;		Weiner, Herbert S. et	☐	☐	☐	☐	☐	☐	☐
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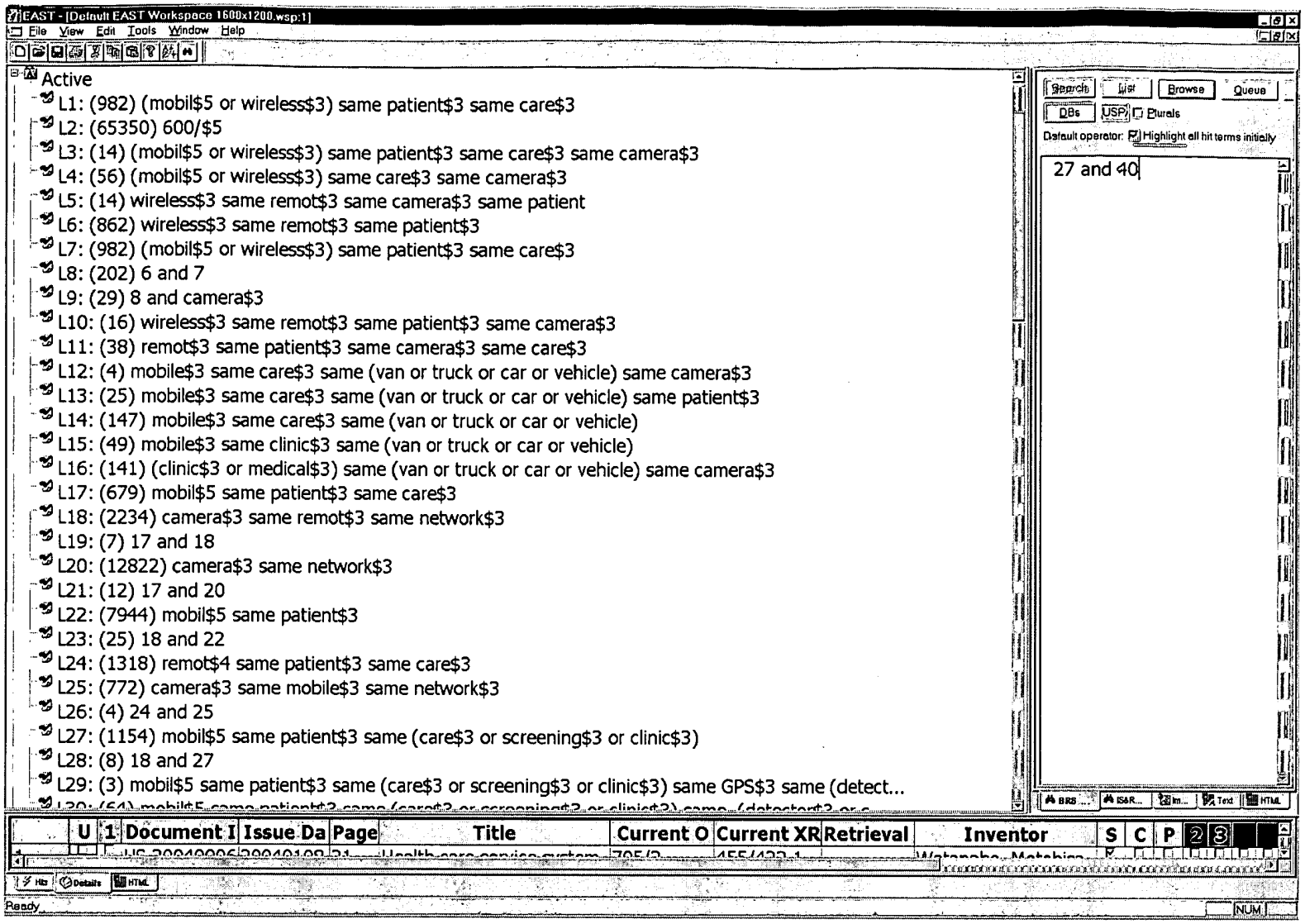
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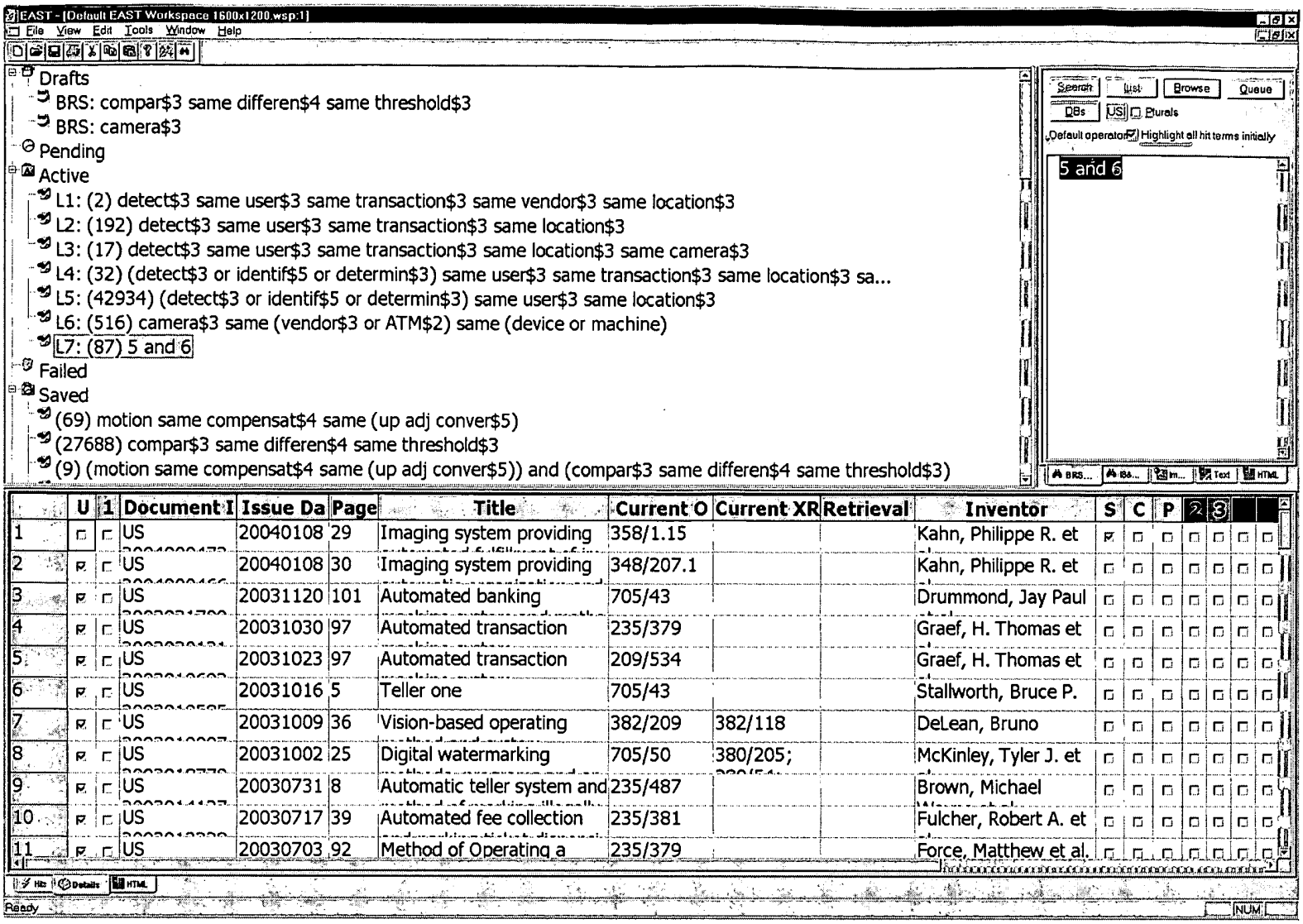

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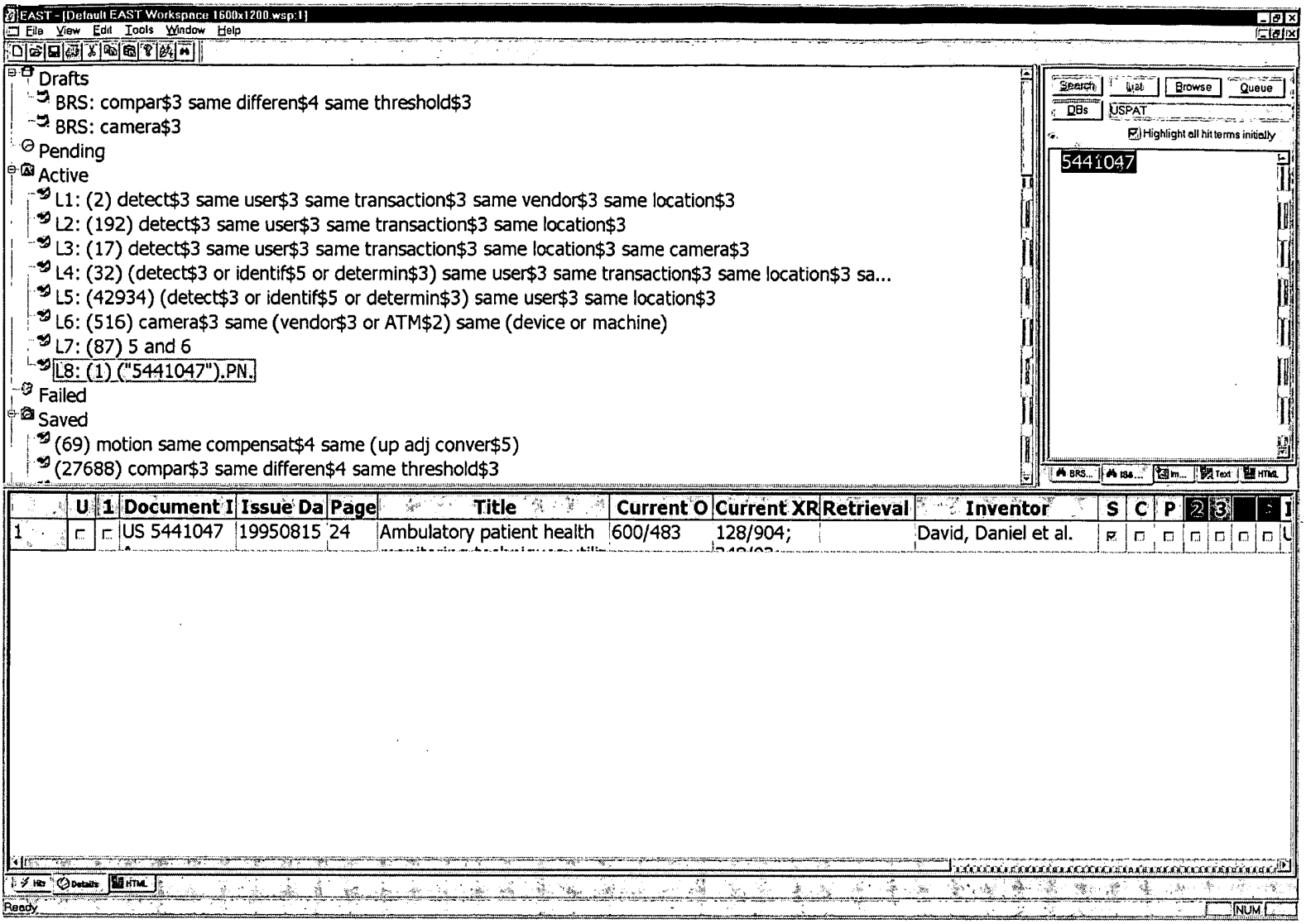
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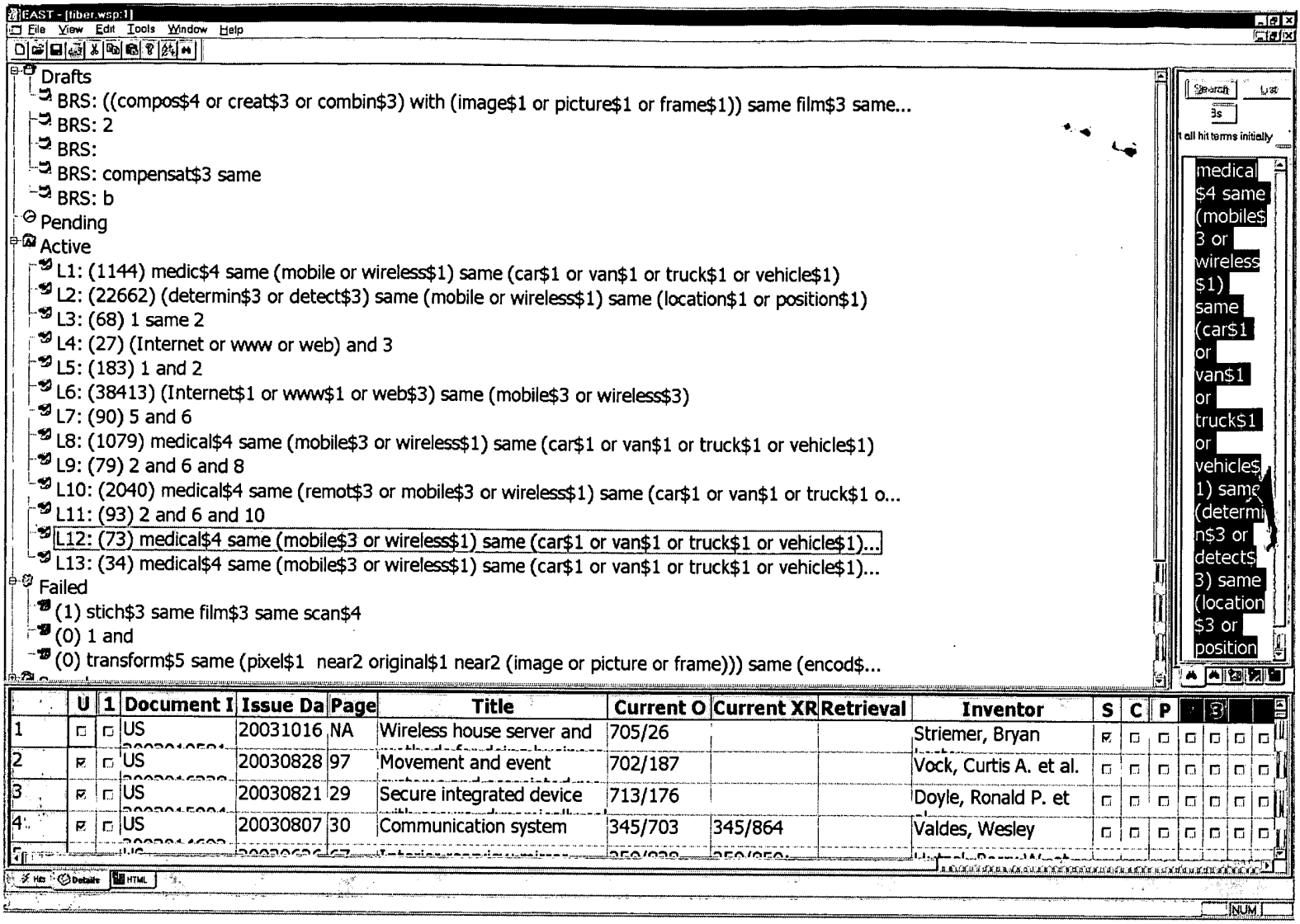
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1 US 20031016 NA Wireless house server and 705/26 Striemer, Bryan
2 US 20030828 97 Movement and event 702/187 Vock, Curtis A. et al.
3 US 20030821 29 Secure integrated device 713/176 Doyle, Ronald P. et
4 US 20030807 30 Communication system 345/703 345/864 Valdes, Wesley
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